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Operations and Maintenance Support for the CTC Archive: Guide to Using the Battle Damage Assessment (BDA) Database

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BDM Federal, Inc.

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13. ABSTRACT *(Maximum 200 words)*
   The purpose of this document is to describe a method of accessing the Battle Damage Assessment (BDA) data collected at the Combat Training Centers (CTC). These data are archived at the Army Research Institute Presidio of Monterey Field Unit (ARI-POM). They are available to those researchers and analysts who have been granted access through CAC-T to the archive. The BDA data are collected at each of the three Combat Training Centers and sent to ARI-POM.
   This document uses the Structured Query Language (SQL) interface to the data in the database. The intent is not to teach the use of SQL, but use it as an instrument to teach the user the schema and relationships of the BDA data. This document addresses understanding the BDA tables and the data within.

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OPERATIONS AND MAINTENANCE SUPPORT FOR THE CTC ARCHIVE:

GUIDE TO USING THE BATTLE DAMAGE ASSESSMENT (BDA) DATABASE

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May 5, 1994

U. S. Army Research Institute

GUIDE TO USING THE BATTLE DAMAGE ASSESSMENT (BDA) DATABASE

1.0   Purpose.

The purpose of this document is to describe a method of accessing the Battle Damage Assessment (BDA) data collected at the Combat Training Centers (CTC). These data are archived at the Army Research Institute Presidio of Monterey Field Unit (ARI-POM). They are available to those researchers and analysts who have been granted access through CAC-T to the archive.

The BDA data is physically located on a computer system at ARI-POM. The structure of the database has been simplified in order to accommodate the different formats of Battle Damage Assessment reports produced at the CTCs. The data from all three CTCs (National Training Center, Joint Readiness Training Center & Combat Maneuver Training Center) are stored in just two tables, the BDA table (which reports losses of targets to specific weapon systems) and the Initial Strength table (which reports the number of vehicles starting and the number lost during the training exercise).

The Weapon table and the Target table contain the descriptions of the different systems in use at the respective CTCs.
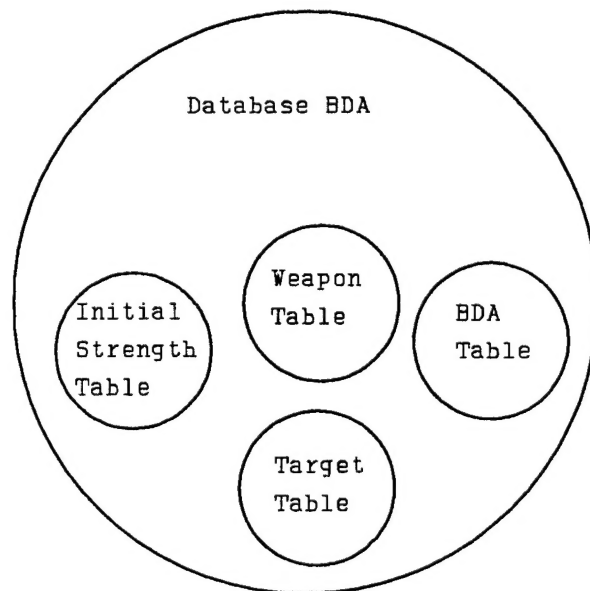
Figure 1:   Tables contained in the Battle Damage Assessment (BDA) database.

This document uses the Structured Query Language (SQL) interface to the data in our database. Our intent here is not to teach the use of SQL, but use it as an instrument to teach the user the schema and relationships of the BDA data. Your tasks as a researcher are: 1) understanding the computer system and its operating system on which the data reside (Novell 3.12) and 2) learning the access methods within the database language to extract the pertinent data to your research (using SQL from FoxPro for Windows) and 3) understanding the structure and relations of the data. This document addresses the third task, that of understanding the BDA tables and the data within.

2.0 Introduction.

The BDA data are collected at each of the three Combat Training Centers and sent to ARI-POM. The NTC has perhaps the most mature set of BDA's of the three CTCs. The JRTC would come in a close second in content and completeness and the newest CTC, the CMTC is still developing a stable format. But as stated earlier, a common data structure represents all three CTC's BDA data.

2.1 The National Training Center BDAs.

At the NTC, the BDA data are collected by the Observer/Controllers (OC) out in the field. Each of the IMILES equipped players is debriefed after the close of the training exercise. Counts of target systems destroyed are summarized by the weapon code of the killing system. This information is transmitted to the control center for inclusion in the After Action Review (AAR) and eventually into the Take Home Package (THP) as historic information. The THP is the source of the BDAs that are included in the BDA database tables. They are manually transcribed into the database from hard copy (paper data). This method is necessary to conform to a standard format and reliable content.

The BDA data for the NTC may not agree with the digital data contained within the mission databases. This is due to the fact that only a subset of players on the training ground have instrumentation systems that record the field events. With this in mind, one might assume that the instrumented summaries would always be less than those reported by the OCs in the THP, but this may not be the case. Many times an instrumented player may report an event, such as a kill, and continue to report it after the first time. Think of the tank that has been destroyed by each weapon system that sees it (known as over-kill). Each of these kills is reported in the digital database, so special care must be taken when comparing the BDAs collected at the end of a training exercise (the state of players at end) to the history of the battle in the mission database (the continuous flow of data).

2.2 The Joint Readiness Training Center BDA's.

Data are collected in much the same fashion at the JRTC as at the NTC. Observers / Controllers manually collect and record the damaged / destroyed target types and summarize them by the killing weapon system. These data are also provided in the Take Home Package.

2.3 The Combat Maneuver Training Center BDAs.

The CMTC data are collected after each training mission, and are derived from debriefing the miles firmware on each vehicle or manpack. It is of the same nature as the NTC's data, because similar training exercises are carried out there only on a smaller scale and without the instrumented systems.

3.0 Getting Started.

Examples have been provided to assist the user in understanding the data schema, and users should refer to an SQL reference manual if additional techniques are required (FoxPro for Windows has an excellent on-line help system). An appendix at the end of this document explains the contents of the CTC BDA database tables.

To access the database, you must be connected to the Novell network at ARI-POM. The data are stored in four files on the server, whose full path name are:

f:\archive\bda\init_str.dbf
f:\archive\bda\bda.dbf
f:\archive\bda\target.dbf
f:\archive\bda\weapon.dbf

The exercises in this document are located on disk, and need not be keyed in by the user. The path / filename string is as follows:

f:\archive\bda\example1.prg
f:\archive\bda\example2.sql
f:\archive\bda\example3.sql

Feel free to copy these examples into your working directory and modify them as you desire, but please do not overwrite the files in the exercise subdirectory. Your working directory should be:

c:\foxprow

if you are at ARI-POM and are using one of the analyst workstations.

Example #1. Using the Initial Strength table.

The following is a simple example of using the Structured Query Language (SQL) to display data at your terminal. The query acts upon the Initial Strength table, and uses the description in the Target table to clarify the data being presented.

To execute this query (assuming you have copied the example queries to your current working directory) select the Program option from the FoxPro menu bar. Choose the Do option, and a list of .prg files will appear in a child window. Double click using the mouse on the first example, example1.prg. The query will execute and place the output to both your working directory and to the FoxPro window.

This query (example1.prg) is as follows:

```
*************************************************
*     This SQL script is example #1 in the BDA users   *
*     guide.  It uses the initial Strength table and    *
*     the target table.                                 *
*************************************************
select  i.mission_id,;
        i.target_side,;
        t.target_desc,;
        i.starting,;
        i.lost;
from    f:\archive\bda\init_str i,;
        f:\archive\bda\target t;
to file example1.txt;
where   i.mission_id      =       'N901C_20';
and     i.target_type     =       t.target_type;
and     i.target_side     =       t.target_side;
order   by i.target_side;
```

Notice how column names in the Target table are the same as some of the column names in the Initial Strength table. This highlights how to match the two tables to obtain the correct results. This standard also applies for the BDA table columns when matching columns with the Target and/or Weapon tables.

Note that in the 'select' clause that we have specified the full path name for the FoxPro files **init_str** and **target**. Output is placed in an output file, example1.txt, which goes to the user's working directory as well as to the user's screen. Your output should look like the following:

MISSION_ID	TARGET_SID	TARGET_DES	STARTING	LOST
N901C_20	B	M1A1_TANK	29	29
N901C_20	B	M2_IFV	30	24
N901C_20	B	M113_APC	24	8
N901C_20	B	VULCAN - TOWED	3	1
N901C_20	B	MORTAR	3	1
N901C_20	B	SCT HMMWV	2	1
N901C_20	O	T72_TANK	8	6
N901C_20	O	BMP	18	9
N901C_20	O	BRDM	2	0
N901C_20	O	ZSU	2	1
N901C_20	O	SAM	2	1
N901C_20	O	INFANTRY	90	46

Example #2. Using the BDA table.

This example will display the Battle Damage Assessments for target types destroyed by weapon systems. We shall include the description of weapons and targets to clarify the output. Also, a technique for isolating a particular group of target types (Blue force) will be demonstrated.

```
                                              Weapon
                                              ┌──────────────┐
                                              │weapon type   │
                                              │weapon side   │
                                              │weapon desc   │
                                              └──────────────┘

                                              BDA
    mission id   ◄─────────────────           ┌──────────────┐
    weapon side  ◄─────────────────           │mission id    │
    weapon desc  ◄─────────────────           │weapon type   │
    target side  ◄─────────────────           │weapon side   │
    target desc  ◄─────────────────           │target type   │
    lost         ◄─────────────────           │target side   │
                                              │lost          │
                                              └──────────────┘

                                              Target
                                              ┌──────────────┐
                                              │target type   │
                                              │target side   │
                                              │target desc   │
                                              └──────────────┘
```
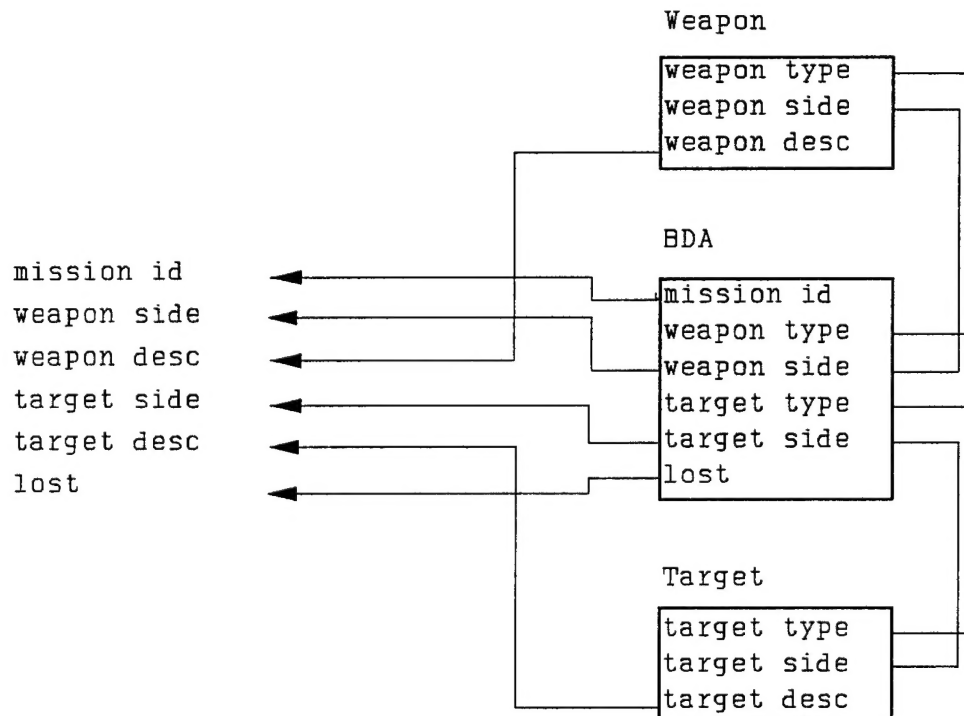
Figure 3: Relationship of the Weapon and Target tables to the BDA table.

```
***********************************************
**      SQL script for example # 2 from guide   **
**      to using BDA database.                   **
***********************************************
select  b.mission_id,;
        b.weapon_side,;
        w.weapon_desc,;
        b.target_side,;
        t.target_desc,;
        b.lost;
```

```
from    f:\archive\bda\bda b,;
        f:\archive\bda\weapon w,;
        f:\archive\bda\target t;
to file example2.txt;
where   b.mission_id      =      'N901C_20';
and     b.target_side     =      'B';
and     b.weapon_type     =      w.weapon_type;
and     b.weapon_side     =      w.weapon_side;
and     b.target_type     =      t.target_type;
and     b.target_side     =      t.target_side;
order   by b.mission_id,b.weapon_side,w.weapon_desc;
```

The output of this query is as follows:

MISSION_ID	WEAPON_SID	WEAPON_DES	TARGET_SID	TARGET_DES	LOST
N901C_20	L	MAINTENANCE DOWN	B	M1A1_TANK	2
N901C_20	L	MILES MALFUNCTION	B	M1A1_TANK	2
N901C_20	O	125MM T-72 MAIN GUN	B	M2_IFV	2
N901C_20	O	125MM T-72 MAIN GUN	B	M113_APC	1
N901C_20	O	125MM T-72 MAIN GUN	B	MORTAR	1
N901C_20	O	23MM ZSU	B	ARTILLERY	1
N901C_20	O	ARTILLERY	B	M1A1_TANK	24
N901C_20	O	ARTILLERY	B	M2_IFV	15
N901C_20	O	ARTILLERY	B	M113_APC	7
N901C_20	O	AT3 (BMP)	B	M2_IFV	1
N901C_20	O	MINES	B	M1A1_TANK	1
N901C_20	O	MINES	B	M2_IFV	6

Example #3. Computing some simple statistics.

This example uses a new technique, using a 'cursor', to assist in computing some summary percentages. A cursor in SQL is defined as the output from a previous query. You cannot update this temporary file, but you can use it for additional processing of your data. In this example, we build a cursor with totals summed using the INIT_STR table and the BDA table. We place this output into a cursor named 'example3', and then preform some calculations on the fields in example3.

The contents of the SQL query example3.prg is:

```
*************************************************
*       SQL script file for example # 3 in guide to      *
*       using BDA database.  Shows use of the 'active      *
*       table', the results of a previous query.           *
*************************************************
select  b.mission_id,;
        b.weapon_type,;
        b.weapon_side,;
```

```
            b.target_type,;
            b.target_side,;
            i.starting as start_strength,;
            i.lost as total_lost,;
            b.lost as casualty_to;
    from    f:\archive\bda\bda b,;
            f:\archive\bda\init_str i;
    into CURSOR example3;
    where b.mission_id       =       'N901C_20';
    and    i.mission_id      =       'N901C_20';
    and    b.target_type     =       i.target_type;
    and    b.target_side     =       i.target_side
    *************************************************
    *    OK, lets use the cursor 'example3' to construct  *
    *    query that will compute percents of force lost   *
    *    by total force and to individual weapon systems. *
    *************************************************
    select  e.mission_id,;
            e.weapon_side,;
            w.weapon_desc,;
            e.target_side,;
            t.target_desc,;
            ((e.total_lost)/(e.start_strength)) as force_lost,;
            ((e.casualty_to)/(e.total_lost)) as lost_to;
    from    example3 e,;
            f:\archive\bda\weapon w,;
            f:\archive\bda\target t;
    to file example3.txt;
    where e.weapon_type      =       w.weapon_type;
    and    e.weapon_side     =       w.weapon_side;
    and    e.target_type     =       t.target_type;
    and    e.target_side     =       t.target_side;
```

Output of these queries are placed in the file 'example3.txt' in your current working directory. It should look like the following:

MISSION_ID	WEAPON_SID	WEAPON_DES	TARGET_SID	TARGET_DES	FORCE_LOST	LOST_TO
N901C_20	O	ARTILLERY	B	M1A1_TANK	1.00	0.83
N901C_20	L	MAINTENANCE DOWN	B	M1A1_TANK	1.00	0.07
N901C_20	O	MINES	B	M1A1_TANK	1.00	0.03
N901C_20	L	MILES MALFUNCTION	B	M1A1_TANK	1.00	0.07
N901C_20	O	125MM T-72 MAIN GUN	B	M2_IFV	0.80	0.08
N901C_20	O	ARTILLERY	B	M2_IFV	0.80	0.63
N901C_20	O	AT3 (BMP)	B	M2_IFV	0.80	0.04
N901C_20	O	MINES	B	M2_IFV	0.80	0.25
N901C_20	O	ARTILLERY	B	M113_APC	0.33	0.88
N901C_20	O	125MM T-72 MAIN GUN	B	M113_APC	0.33	0.13
N901C_20	O	125MM T-72 MAIN GUN	B	MORTAR	0.33	1.00

Output of these queries are placed in the file 'example3.txt' in your current working directory. It should look like the following:

MISSION_ID	WEAPON_SID	WEAPON_DES	TARGET_SID	TARGET_DES	FORCE_LOST	LOST_TO
N901C_20	O	ARTILLERY	B	M1A1_TANK	1.00	0.83
N901C_20	L	MAINTENANCE DOWN	B	M1A1_TANK	1.00	0.07
N901C_20	O	MINES	B	M1A1_TANK	1.00	0.03
N901C_20	L	MILES MALFUNCTION	B	M1A1_TANK	1.00	0.07
N901C_20	O	125MM T-72 MAIN GUN	B	M2_IFV	0.80	0.08
N901C_20	O	ARTILLERY	B	M2_IFV	0.80	0.63
N901C_20	O	AT3 (BMP)	B	M2_IFV	0.80	0.04
N901C_20	O	MINES	B	M2_IFV	0.80	0.25
N901C_20	O	ARTILLERY	B	M113_APC	0.33	0.88
N901C_20	O	125MM T-72 MAIN GUN	B	M113_APC	0.33	0.13
N901C_20	O	125MM T-72 MAIN GUN	B	MORTAR	0.33	1.00
N901C_20	B	TOW	O	T72_TANK	0.75	0.50
N901C_20	B	ARTILLERY	O	T72_TANK	0.75	0.33
N901C_20	B	120MM TANK MAIN GUN	O	T72_TANK	0.75	0.17
N901C_20	B	25MM M2/3 MAIN GUN	O	BMP	0.50	0.44
N901C_20	B	120MM TANK MAIN GUN	O	BMP	0.50	0.11
N901C_20	B	TOW	O	BMP	0.50	0.44
N901C_20	B	25MM M2/3 MAIN GUN	O	SAM	0.50	1.00
N901C_20	B	ARTILLERY	O	INFANTRY	0.51	1.00

Appendix A - Combat Training Center (CTC) Battle Damage Assessment tables

The Battle Damage Assessment tables are composed of two types of tables for the CTCs. They are data tables (the BDA and Initial Strength) and parameter tables (the Target and Weapon).

The format and definition of the BDA table is as follows:

Column name	Format	Description
mission_id	c10	The training mission name. An eight digit field with the first character identifying the CTC from which the data originated. i.e. N for NTC, J for JRTC and C for CMTC. The second and third digits are for year of rotation (90, 91 etc..). The third digit is a hexadecimal number between 1 and E (or 1 to 14 decimal) and identifies the rotation number. Digits five and six identify the force type. Digits seven and eight are for the day of month when the training mission was held.
weapon_type	i2	A code identifying the weapon system. See the Weapon table for a complete list of codes and the weapon descriptions.
weapon_side	c1	B for blue force, O for opposing force or L for the Observer/Controller's
target_type	i2	Code identifying the target type of the casualty. See the Target table for a complete list of codes and the target type descriptions.
target_side	c1	B for blue force, O for opposing force or L for the Observer/Controller's
lost	i2	The number of targets of this 'type' lost to the weapon system in weapon_type.

The format and definition of the Initial Strength (initial_strength) table is as follows:

Column name	Format	Description
mission_id	c10	Same as for mission_id in BDA table, above.
target_type	i2	Same as for target_type in BDA table, above.
target_side	c1	Same as for target_side in BDA table, above.
starting	i2	The count of this target type available at the start of the training exercise.
lost	i2	The count of this target type lost as a casualty during the training exercise. This is the total number of target types lost during the mission to all weapon types. The BDA table has the weapon system casualty breakdowns.

The format and definition of the Weapon table is as follows:

Column name	Format	Description
weapon_type	i2	Same as for weapon_type in BDA table, above.
weapon_side	c1	Same as for weapon_side in BDA table, above.
weapon_desc	c20	A literal string with a brief description of the weapon system.

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Weapon System codes that are currently in effect at the CTCs are as follows:

Weapon Side	Weapon Type	Weapon Description
B	10	60MM
B	11	81MM
B	12	107MM
B	13	MORTAR
B	20	105MM
B	21	155MM
B	22	175MM
B	23	8INCH
B	24	227MM ROCKET
B	25	ARTILLERY
B	30	105MM TANK MAIN GUN
B	31	120MM TANK MAIN GUN
B	32	152MM TANK MAIN GUN
B	40	25MM M2/3 MAIN GUN
B	50	50CAL MACHINE GUN
B	51	M60 MACHINE GUN
B	52	COAX
B	53	M249 MACHINE GUN
B	54	M16 RIFLE
B	55	40MM GRENADE
B	56	MARK 19 GRENADE
B	57	SMALL ARMS
B	60	TOW
B	61	DRAGON
B	62	VIPER LAW
B	63	SHILLEGH MISSILE
B	64	TOW (ITV)
B	65	TOW (AH-1)
B	66	TOW (HMMWV)
B	67	AT-4
B	68	TOW (M2/3)
B	69	ATGM
B	70	20MM VULCAN
B	71	CHAPARRAL
B	72	STINGER
B	73	ADA
B	74	HAWK
B	80	30MM AIRBORNE
B	81	20MM AIRBORNE
B	82	HELLFIRE

Weapon Side	Weapon Type	Weapon Description
B	83	2.75INCH ROCKET
B	84	MAVERICK
B	85	ROCKEYE
B	86	CAS
B	87	ATTACK HELICOPTER
B	90	FA
B	91	FASCAM
B	92	MINES
B	93	NBC (PERS)
B	94	NBC (NONPERS)
B	95	KIA
B	96	WIA
B	97	DOW
L	0	EVP NULL WEAPON
L	1	EVP 105MM BALLISTIC
L	2	EVP 120MM BALLISTIC
L	3	WEAPON UNDEFINED
L	4	CONTROLLER GUN
L	5	FRATRACIDE
L	6	MILES MALFUNCTION
L	7	MAINTENANCE DOWN
L	8	OTHER
O	110	120MM
O	111	160MM
O	112	240MM
O	113	MORTAR
O	120	122MM HOWITZER
O	121	152MM HOWITZER
O	122	152MM GUN HOWITZER
O	123	203MM GUN HOWITZER
O	124	122MM ROCKET
O	125	220MM ROCKET
O	126	FROG
O	127	ARTILLERY
O	140	125MM T-72 MAIN GUN
O	141	125MM T-80 MAIN GUN
O	150	73MM BMP MAIN GUN
O	151	30MM BMP MAIN GUN
O	160	12.7MM MACHINE GUN
O	161	PKT
O	162	AKM
O	163	RPG
O	164	MT-12 AT GUN

Weapon Side	Weapon Type	Weapon Description
O	165	RPG-16
O	166	SMALL ARMS
O	167	AGS-17
O	168	14.5MM BTR
O	170	AT3 (BMP)
O	171	AT4
O	172	AT5 (BMP)
O	173	AT6
O	174	AT5 (BRDM)
O	175	AT5 DISMOUNT
O	180	23MM ZSU
O	181	SA9
O	182	SA13
O	183	SA14
O	184	SA8
O	185	SAM
O	186	ADA
O	190	12.7MM AIRBORNE MG
O	191	30MM GUN
O	192	57MM ROCKET
O	193	FRONTAL AVIATION
O	194	HIND-D MI-24
O	195	AT-6 HIND
O	196	30MM HIND
O	200	MINES
O	201	NBC
O	202	FASCAM

Close inspection of the above weapon type groupings confirms that they have been selected to match the groupings in the mission research databases from the NTC. These groupings are as follows:

Observer/Controller:	>= 0	and	< 10	
Blue Force Types:	>= 10	and	< 20	MORTARS
	>= 20	and	< 30	ARTILLERY
	>= 30	and	< 40	TANK MAIN GUN
	>= 40	and	< 50	M2 / M3 25mm
	>= 50	and	< 60	SMALL ARMS
	>= 60	and	< 70	MISSILES
	>= 70	and	< 80	AIR DEFENSE
	>= 80	and	< 90	AIRBORN WEAPONS
	>= 90	and	< 100	ANTI-PERSONNEL
Opposing Force Types:	>= 100	and	< 110	UNUSED
	>= 110	and	< 120	MORTARS
	>= 120	and	< 130	ARTILLERY
	>= 130	and	< 140	UNUSED
	>= 140	and	< 150	TANK MAIN GUN
	>= 150	and	< 160	BMP/BRDM WEAPONS
	>= 160	and	< 170	SMALL ARMS
	>= 170	and	< 180	MISSILES
	>= 180	and	< 190	AIR DEFENSE
	>= 190	and	< 200	AIRBORN WEAPONS
	>= 200	and	< 210	ANTI-PERSONNEL

The format and definition of the Target table is as follows:

Column name	Format	Description
target_type	i2	Same as for the target_type in BDA table, above.
target_side	c1	Same as for the target_side in BDA table, above.
target_desc	c20	A literal string with a brief description of the target type.

Target Type	Target Side	Target Description
B	30	M60_TANK
B	31	M1_TANK
B	32	M1A1_TANK
B	33	M551_TANK
B	40	M2_IFV
B	41	M3_CFV
B	42	M113_APC
B	43	M113_WITH_TOW
B	44	M901_AT_APC
B	45	E CO - CFV
B	46	M577
B	50	SP_VULCAN
B	51	MANPACK_STINGER
B	52	SP_CHAPARRAL
B	53	VULCAN - TOWED
B	54	M2 STINGER
B	60	MANPACK
B	61	MANPACK_M16
B	62	MANPACK_M60
B	63	MANPACK_M249
B	64	MANPACK_M203
B	65	MANPACK_TOW
B	66	MANPACK_DRAGON
B	67	MANPACK_VIPER_LAW
B	68	MANPACK_MARK_19
B	70	MANPACK_AT-4
B	71	ATGM
B	80	FIST_V
B	85	M224_MORTAR
B	86	107MM MORTAR
B	87	81MM MORTAR

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Target Type	Target Side	Target Description
B	88	60MM MORTAR
B	89	MORTAR
B	90	M125_SP_MORTAR
B	91	M106_SP_MORTAR
B	100	M108_SP_HOWITZER
B	101	M109_SP_HOWITZER
B	102	M107_SP_GUN_HOWITZER
B	103	M110_SP_HOWITZER
B	104	MRLS
B	105	ARTILLERY
B	110	AH_64
B	111	AH_1S
B	112	OH_58
B	113	UH_1
B	114	UH_60
B	115	OH-58D
B	116	CH-47
B	117	ATTACK HELICOPTER
B	120	A10
B	121	FIGHTER
B	122	BOMBER
B	123	FIGHTER_BOMBER
B	124	RECON
B	125	CAS
B	130	RADAR
B	131	JAMMER
B	132	COLLECTOR
B	133	TRUCK
B	134	HMMWV
B	135	TRUCK_HMMWV_MARK_19
B	136	CEV
B	137	ACE
B	138	AVLB
B	139	AVLM
B	140	SCT HMMWV
B	141	SCT SQD
B	142	IN SQUAD
B	143	HMMWV (TOW)
B	144	INFANTRY
B	145	AVENGER
L	0	EVP_NULL_PLATFORM
L	1	UNDEFINED_PLATFORM
L	10	FIELD_CONTROLLER

Target Type	Target Side	Target Description
L	11	FIELD_VIDEO
L	12	FIELD_MARKER
L	20	MISC / OTHER
O	160	T72_TANK
O	161	T80_TANK
O	170	BMP1
O	171	BMP2
O	172	BMP
O	173	BRDM
O	174	BRDM2_AT5
O	175	BRDM_AT3
O	176	BTR
O	180	ZSU
O	181	BRDM2_AD
O	182	MTLB
O	183	MANPACK_SA14
O	184	SA8
O	185	SA9
O	186	SAM
O	187	AD C^2
O	190	MANPACK
O	191	MANPACK_AKM
O	192	MANPACK_PKT
O	193	MANPACK_AT3
O	194	MANPACK_AT4
O	195	MANPACK_RPG
O	196	AT-5
O	197	ATGM
O	198	INFANTRY
O	200	M1943_MORTAR
O	201	M160_MORTAR
O	202	M240_MORTAR
O	204	MORTAR
O	210	122_SP_HOWITZER
O	211	152_SP_HOWITZER
O	212	152_SP_GUN_HOWITZER
O	213	203_SP_GUN_HOWITZER
O	214	BM21_MRL
O	215	BM27_MRL
O	216	FROG
O	217	ARTILLERY
O	218	ACRV
O	219	MT-12

Target Type	Target Side	Target Description
O	220	HIND_D
O	221	HIND_E
O	222	UH_HIP
O	223	OH_HOPLITE
O	230	FIGHTER
O	231	BOMBER
O	232	FIGHTER_BOMBER
O	233	RECON
O	234	FRONT AVIATION
O	240	JAMMER
O	241	COLLECTOR
O	242	TRUCK
O	243	VISMOD
O	244	RADAR
O	245	OTHER / MISC
O	250	DIS ENGINEERS

The target type codes have been revamped to more closely match the grouping of target types in the mission research databases from the NTC. These groupings are as follows:

Observer/Controller:	>=	0	and	< 10	UNDEFINED TARGET
	>=	10	and	< 20	O/C VEHICLES
Blue Force Target Types:	>=	20	and	< 30	UNUSED
	>=	30	and	< 40	TANKS
	>=	40	and	< 50	PERSONNEL CARRIER
	>=	50	and	< 60	AIR DEFENSE
	>=	60	and	< 70	MANPACKS
	>=	70	and	< 80	MISSILES
	>=	80	and	< 90	MORTARS
	>=	90	and	< 110	ARTILLERY
	>=	110	and	< 120	HELICOPTERS
	>=	120	and	< 130	FIXED WING
	>=	130	and	< 140	MISC
	>=	140	and	< 150	INFANTRY/SCOUTS
Opp. Force Target Types:	>=	150	and	< 160	UNUSED
	>=	160	and	< 170	TANKS
	>=	170	and	< 180	PERSONNEL CARRIER
	>=	180	and	< 190	AIR DEFENSE
	>=	190	and	< 200	MANPACKS
	>=	200	and	< 210	MORTARS
	>=	210	and	< 220	ARTILLERY
	>=	220	and	< 230	HELICOPTERS
	>=	230	and	< 240	FIXED WING
	>=	240	and	< 250	MISC